High Temperature Battery for In Situ Exploration of Venus, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

Development of batteries capable of operational temperatures of 380°C and 486

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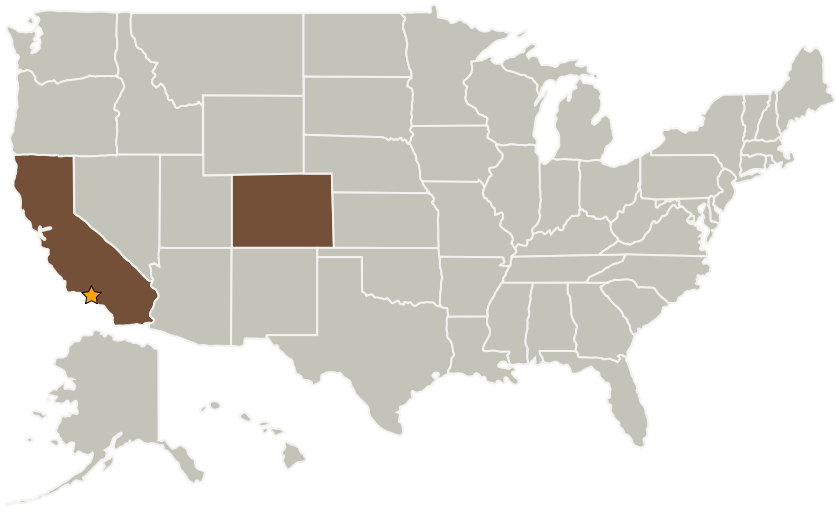
C with a specific capacity 200 Wh/kg for use as a power source on the Venusian surface and for planetary probes in similar high temperature atmospheres and where ambient pressures of 90 atmospheres are to be expected. These conditions are well beyond most conventional battery technologies, except those experienced by thermally activated batteries that use a Li(Si)/FeS?2 couple. This proposal provides for the novel approach of using proven expertise from thermal batteries to develop high temperature space batteries. The approach will be to first determine the optimum cell chemistry from potential candidate systems and test via cells. Next, verification of cell performance at temperatures will be made. Design of a robust battery/cell container using super nickel alloys such as Inconel 718 will be made. Stress and dynamics analyses will be made on the final mechanical design that will be verified by test.

Primary U.S. Work Locations and Key Partners



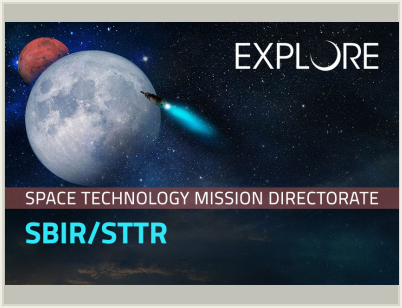


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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Mobile Energy Products, Inc.	Supporting Organization	Industry	Colorado Springs, Colorado

Primary U.S. Work Locations	
California	Colorado

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.2 Energy Storage
    - TX03.2.1 Electrochemical: Batteries